PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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TUBERCLE BACILLI IN THE NASAL CAVITY OF HEALTHY INDIVIDUALS.

STRAUS (*Archives de Méd. exper. et d'Anat. path.*, 1894, vi., No. 4, 633) has succeeded in demonstrating the presence of virulent tubercle bacilli in the nasal cavities of persons, who, though themselves healthy or affected only with some chronic nervous disease, had been inmates of the same wards with phthisical patients for some time previous, or were physicians in attendance upon such patients. In none was any trace of tubercular trouble discoverable. Yet in nine of twenty-nine cases examined the presence of the bacilli in the nasal mucus was proved.

The investigation was conducted as follows: The whole nasal cavity as far as possible was swabbed out with small pledgets of cotton. These were thoroughly shaken in sterilized bouillon or water, and this was then injected into the peritoneal cavity of guinea-pigs. In seven cases the animals died of septicæmia or of purulent peritonitis before it was possible to determine the presence of any tubercular process; thirteen of the animals remained well, and when killed showed no trace of tuberculosis; in nine cases the animals died or were killed at the end of from three to five weeks, and when examined showed tubercular lesions, often very pronounced, in which the presence of tubercle bacilli was demonstrated. Thus, in nearly a third of the cases examined the nasal cavity contained virulent tubercle bacilli in sufficient numbers to cause pronounced lesions in guinea-pigs.

The importance of the results of these experiments of Straus is very great. In 1875 Laveran showed by statistics that the mortality from tuberculosis among the inmates of the military infirmaries was much greater than that from the same cause in the standing army, and somewhat later Debove drew attention to the greater frequency of phthisis among those who had been long residents of the Hospital Bicêtre because of chronic nervous or other non-tubercular disease. The investigation of Cornet, in 1888, into the mode of dissemination of the tubercle bacilli outside the body afforded an explanation of this greater prevalence of tuberculosis in hospitals, almshouses, nunneries, etc., since he demonstrated the presence of the bacilli in the dust and on the walls of the wards of these institutions; and infection through inhalation of this infectious dust was inferred as the probable mode of communication of the disease. In the experiments of Straus we have direct proof of the correctness of this view, for the tubercle bacilli are found in the very act of entering the body through the respiratory tract. Still it must not be supposed that in all the cases in which the bacilli were found in the nasal cavity tuberculosis would have resulted; the great majority of the germs would undoubtedly be cast off in the nasal mucus and never find entrance to the body.

The results of Straus also afford another instance of the important functions of the nasal mucous membrane in ridding the inspired air of the microorganisms which it may contain, for in none of the cases in which tubercle bacilli were found was there any sign of tuberculosis of the lungs, which would have been expected in at least some of them if the germs had found access to the deeper respiratory tract.

THE GONOCOCCUS: ITS CULTIVATION ON ARTIFICIAL MEDIA AND INOCULATION IN DOGS.

FOR nearly six years after its discovery all efforts to cultivate the gonococcus artificially were unavailing, and in consequence the proof of its pathogenic nature was incomplete. In 1885, however, it was successfully cultivated upon human blood-serum, and its virulence was demonstrated through inoculation into the human urethra. Until very recently human serum has been supposed to be a necessary ingredient of all culture media for its growth, and the difficulties of obtaining this in sufficient quantity have prevented any very general use of cultures of the gonococcus for diagnostic purposes. About a year ago it was discovered that the addition of urine to the culture medium afforded the conditions necessary. It was at first supposed that this depended upon the presence in the urine of certain salts necessary for the growth of the gonococcus. This TURRÓ (*Centralbl. für Bakt. u. Parasit.*, 1894, xvi., No. 1) shows to be a mistake. What is needed for the cultivation of the gonococcus is an *acid* medium.

Although the freshly voided urine in gonorrhœa is usually alkaline in reaction, Turró points out the fact that this is due in great part to its content of pus, since, when this has settled, the supernatant liquid is acid. In this acid urine the gonococcus develops vigorously. The idea was thereby suggested that this might be due to the acidity of the urine, and culture media were prepared of various degrees of acidity to test its accuracy. It was found that the gonococcus grew well on ordinary gelatin which had not been neutralized. Even the addition of a drop of hydrochloric acid to each 100 c.c. of this medium served only to delay the growth, not to prevent it.

These facts are important, since they make it possible very easily to obtain pure cultures of the gonococcus from gonorrhœal pus. Its simple inoculation into such an acid medium is sufficient, since the strong acidity of the medium prevents the growth of any other germs which may be present.

For details of the appearance of the cultures under various conditions we must refer to the original paper.

Another important fact developed by Turró is that the gonococcus thus grown on acid media possesses pathogenic qualities for dogs. A little of the culture introduced under the prepuce, without necessary injury of the mucous membrane or introduction into the mouth of the urethra, produces intense purulent inflammation, which may extend up the urethra to the bladder and kidneys, or may result in a general systemic infection and pyæmia. The gonococci obtained by subsequent culture from these lesions are somewhat smaller than those of man, but are otherwise similar. The infection is less severe in bitches. It was found that gonococci thus virulent